

	INVENTION DISCLOSURE	PAGE ONE OF <u>4</u>	
PDNO <u>10991850</u>	DATE RCVD <u>6-17-99</u>	ATTORNEY <u>HID/IRP</u>	
<i>Instructions: The information contained in this document is COMPANY CONFIDENTIAL and may not be disclosed to others without prior authorization. Submit this disclosure to the HP Legal Department as soon as possible. No patent protection is possible until a patent application is authorized, prepared, and submitted to the Government.</i>			
Descriptive Title of Invention: User Interface for Instant and Full-Featured Index Page Printing from a Direct-Connect Printer.			
Name of Project: Ansel Printer			
Product Name or Number: HP PhotoSmart P1000/1000 Printer			
Was a description of the invention published, or are you planning to publish? If so, the date(s) and publication(s): No.			
Was a product including the invention announced, offered for sale, sold, or is such activity proposed? If so, the date(s) and location(s): No.			
Was the invention disclosed to anyone outside of HP, or will such disclosure occur? If so, the date(s) and name(s): Yes. Usability test subjects were under non-disclosure agreement.			
<small>If any of the above situations will occur within 3 months, call your IP attorney or the Legal Department now at 1-553-3061 or 408-553-3061.</small>			
Was the invention described in a lab book or other record? If so, please identify (lab book #, etc.)? Description was documented in the Ansel HIT List, which is a database in Lotus Notes.			
Was the invention built or tested? If so, the date: Yes.			
Was this invention made under a government contract? If so, the agency and contract number: No.			
Description of Invention: Please preserve all records of the invention and attach additional pages for the following. Each additional page should be signed and dated by the inventor(s) and witness(es).			
A. Prior solutions and their disadvantages (if available, attach copies of product literature, technical articles, patents, etc.). B. Problems solved by the invention. C. Advantages of the invention over what has been done before. D. Description of the construction and operation of the invention (include appropriate schematic, block, & timing diagrams; drawings; samples; graphs; flowcharts; computer listings; test results; etc.)			
Signature of Inventor(s): Pursuant to my (our) employment agreement, I (we) submit this disclosure on this date: <u>June 16, 1999</u> .			
255980	Wendy F. Hunter		655-8550 66-785 Telex Mailstop
Employee No.	Name	Signature	Entity & Lab Name
Employee No.	Name	Signature	Entity & Lab Name
Employee No.	Name	Signature	Entity & Lab Name
<small>(If more than four inventors, include additional information on another copy of this form and attach to this document)</small>			

	INVENTION DISCLOSURE	COMPANY CONFIDENTIAL	PAGE <u>2</u> OF <u>4</u>
Signature of Witness(es): (Please try to obtain the signature of the person(s) to whom invention was first disclosed.)			
The invention was first explained to, and understood by, me (us) on this date: <u>October 20, 1998</u>			
Full Name	Signature	Date of Signature	
<u>Francis Backman</u>	<u>[Signature]</u>	<u>6/16/99</u>	
Full Name	Signature	Date of Signature	

Inventor & Home Address Information: (If more than four inventors, include addl. information on a copy of this form & attach to this document)			
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Do you have a Residential P.O. Address? P.O. BOX	City	State	Zip
Greeted as (nickname, middle name, etc.)		Citizenship	
		<u>USA</u>	

Inventor's Full Name			
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Greeted as (nickname, middle name, etc.)		Citizenship	

A. PRIOR SOLUTIONS AND DISADVANTAGES

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One prior solution in a direct-connect printer is the user interface on the Lexmark Photo Jetprinter 5700, which allows users to print an index (thumbnail page). The control panel on this printer has a dedicated "INDEX" button. When pressed, it prints thumbnail size photos of all of the images on the camera's memory card (inserted into the printer). Superimposed on each photo is a corresponding photo number.

The disadvantages of this solution are:

- Users can not print a subset of images that they are interested in. The "Index" button always prints ALL photos on the card. Users can not choose which photos to print. This can waste time, paper, and ink. This is especially relevant for users with large capacity memory cards, and/or who use a single card to record multiple events. These users may want to print only a subset of thumbnails for a friend who is interested in only 1 of the 5 events recorded on the memory card. They may print this set of thumbnails for the friend so that it could be used to "order" specific images to be printed in various sizes.
- Users have to turn their heads to view some (i.e. portrait) photos in the correct orientation, since all photos are printed in landscape orientation, regardless of the orientation that the photo was taken.
- Each photo is obscured by the photo number that is superimposed on the lower left corner.
- The index print does not provide absolute cues to help them identify their photos. The only cue is the photo number, and this is a relative value which can change when photos are deleted from the memory card. There are no absolute cues (such as a date or filename) to identify the photo more specifically and which do not change after the photo is taken.


B. PROBLEMS SOLVED BY THE INVENTION

The problems that the invention solves are:

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- Users can not print a subset of photos on the card. An index print always includes ALL photos.
 - Users have to view all photos as landscape images, even though some are intended to be viewed as portrait oriented images.
 - Users' view of the photos is obscured by the photo number that is superimposed on the image itself.
 - The index print does not provide absolute cues (besides the thumbnail itself) for identifying the photos.

C. ADVANTAGES OF THE INVENTION OVER WHAT HAS BEEN DONE BEFORE

The advantages of the invention are:

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- It allows users to choose which photos to print in index pages. Users do not have to print all photos in the index page.
 - It prints photos in the correct orientation, as defined by the input source (e.g. the digital camera).
 - It prints the photo number below the images on the index, so that entire image is visible.
 - On the index, it provides absolute cues for identifying the image: the date (that the photo was taken) and the filename.
 - The size of the image is automatically chosen to be large (1.5 inch long) for A/A4 paper, and small (1.1 inch long) for 4x6 inch or A6 size or Hagaki size paper. This automatic scaling of the thumbnail allows more efficient use of the paper. The thumbnails printed on A/A4 paper are large enough for users to make printing decisions; the thumbnails printed on the smaller paper are sized to help identify the photos, and to have up to 9, a useful number of photos, on a page. This small size paper is also a more compact size to keep for future reference.

D. DESCRIPTION OF THE CONSTRUCTION AND OPERATION OF THE INVENTION

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The user interface and how to print index pages:

- There is a 2-line, 16 character per line LCD on the control panel. In the printer's idle state, there are 3 fields shown: Quantity of photos chosen (top line), number of copies (bottom left), and photo size (bottom right).

ALL PHOTOS	
1 copy	Index

Users can print an index page instantly, at the press of a single button. The default values for these fields is pictured above: ALL PHOTOS – 1 copy – Index. Pressing the PRINT button on the printer will print 1 copy of all photos (from the memory card), as thumbnails. The printer powers on into this set of default settings. Also, when the user presses the CANCEL button in the idle state, all values will go back to these default settings. One of the major goals of the interface was to make this index print (of all photos) easy and fast to do. This is because printing it is typically the most frequent task that users will perform on the printer.

"Index" is treated as a photo size in the user interface. I.e., the other values (for U.S.) in the photo size field can be 2½x3¼, 3x4, 3½x5, 4x6, 5x7, 8x10. However, whereas the other photo sizes are fixed in both length and width, the index size is only fixed in length. The other dimension is determined by the aspect ratio of the photo. The index photos are not cropped by the printer.

Users can choose which photos they want to include on the index page. They do this by pressing the CHOOSE PHOTOS button to display the desired photo, then press the OK button to enter it. They repeat these steps to choose additional photos.

Users can enter the photos in any order that they desire, and the photos will print in this order.

A maximum of 25 thumbnails will print on an A/A4 size page. For 4x6 inch, Hagaki, and A6 paper, a maximum of 9 thumbnails per page will print. The printer will print as many pages as necessary until all of chosen images are printed. Photos will print in the orientation (landscape vs. portrait) designated by the input source. Typically, this will be from a digital camera. Some cameras have sensors that automatically detect the orientation that the photo was taken in. Some cameras allow users to manually rotate the photos using the camera user interface. The default orientation for photos (i.e. for cameras without rotation capability) is landscape.

Along with the photo number, the date (that the photo was taken), and the filename, are printed below each thumbnail on the index.

